

bp



LSPS Update

January 2021



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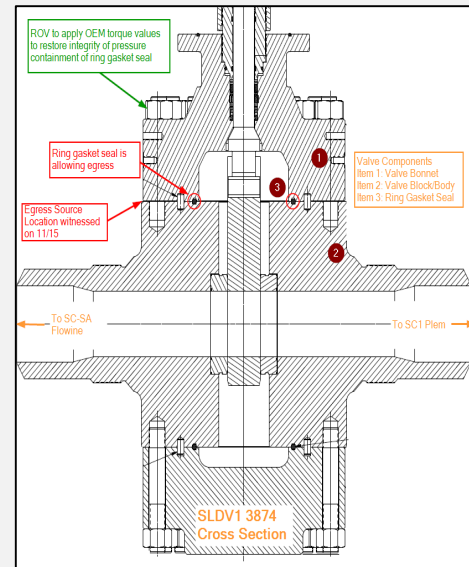
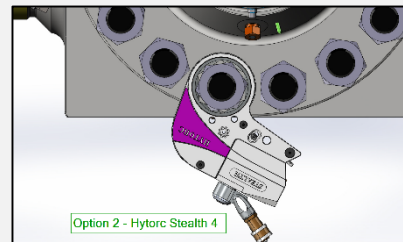
Agenda

Time	Topic
2:00 – 2:10	Introductions
2:10 – 2:20	In-Situ Repair Operation Update
2:20 – 2:30	LSPS leak investigation Update
2:30 – 2:40	Single Flowline Feasibility Study report-out
2:40 – 2:55	Remediation Forward Plan
2:55 – 3:00	Close



In-situ Repair (Bolt Tightening) update

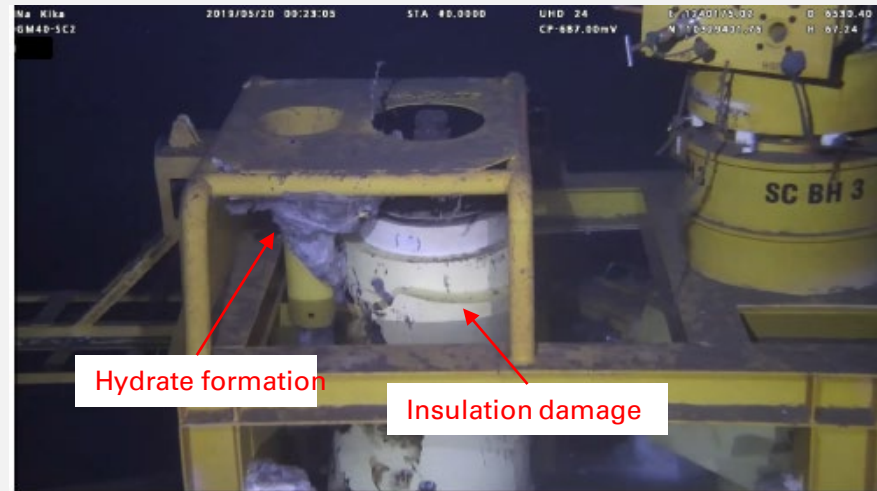
- Updated CAP issued to BSEE 12/1
- Cap approval granted 12/17
- Vessel mobilization to field on Jan 6
- Basket/tool deployments and insulation removal was completed in a single day
- Two rounds of torque was applied to nuts with insignificant rotation on few nuts – signifying no change to condition (bonnet flat to flat)
- Demobilized vessel Jan 9
- Ingress testing was monitoring rate of increase throughout torqueing and no changes during or after torqueing





LSPS Investigation Update

- Pressure anomaly observed during unexpected SA PLEM valve actuation (April 2020 – Genovesa SFL campaign)
- Aug 2015, Dec 2017, Apr 2018 system pressure data allowed for an ingress event post hot oil circulation.
- May 2019 hydrate and insulation damage seen in ROV GVI.
- Data supports that the leak occurs following a dead oil circulation with hot oil above hydrostatic pressure.
- After flowline cools to ambient temperature, pressure decreases to sub ambient when ingress occurs.
- Internal hydrate formation in the sealing area (bonnet and actuator) supports why blockage only allows an ingress leak until system is hot oiled (melts the hydrate).
- No data prior to 2015 that supports the real root cause of the anomaly.



Conclusion: Genovesa SFL scope removal did play a role in noticing the pressure anomaly but is not the root cause for the ingress.



Single Flowline (SFL) plan feasibility study

- Conducted preliminary internal reviews for assessing single leg option risks/opportunity
 - Regulatory
 - Subsea schematic (chemical delivery)
 - Offshore execution (topsides, jumper removal and reinstallation)
 - Startup/shutdown Operations, deep dive on flow assurance
- Plan simplifications offer reduced execution risk, limiting operation to Gen well only
 - Deoiling scope/risk reduced at this stage to only the SA flowline jumper (using alternating MEG/MeOH from pressure cap at Gen tie-in point)
 - Defer de-oiling full segment and decommissioning/recovery of PLEMs to larger construction vessel campaign
 - Flow assurance strategy and analysis supports operations with MeOH during first two years of operation, within treatable water limit (No topside modifications)
 - Alternate options of adding LDHI injection capability or extending hydrate conservatism though testing could be considered if water rate exceeds plan, but could be considered as choice of risk mitigation off critical path to startup.
 - Critical path could be through Regulatory/permits, with SOP updates being most critical to schedule with Ops team. Integrated schedule to be developed including appropriate technical/commercial milestones.
- Conclusion: SFL operations appear not to create enhance risk versus other Na Kika hub operations however Genovesa must operate in a narrowly defined operating envelope and Genovesa well start-up timing may be extended due to specific procedures involved



Single Flowline (SFL) Plan

- BP will progress the Single Flowline plan as set out in the Fieldwood proposal provided there is formal commitment to loop restoration to mitigate the adverse impact to the LSPS
 - On the basis of the feasibility study there appears to be no enhanced risk.
 - The single flowline configuration will require Genovesa to operate within a narrower operating envelope and may require significantly longer ramp-up times
- Once the AFEs are in place, BP will plan and execute these activities as efficiently as possible within our standard activity planning and integration process
- Estimated timing for key milestones is:
 - Genovesa jumper recovery and SA FL Jumper de-oil/recovery – mid-late Feb (based on vessel)
 - Regulatory - host working session to outline key permits and approach to BSEE
 - Genovesa Jumper installation - assumed in March (driven by permit approval)
 - Genovesa commissioning and first oil - April – May (pending SOP updates and startup reviews in parallel)
- Fieldwood, as MC519 operator, needs to engage in regulatory conversations necessary for lease retention



Full LSPS Remediation – next steps

- Current base plan is loop reinstatement via replacement of the SC to SA segment and PLEMs
 - Total cost expected to not exceed \$40m gross
- Develop decommissioning plan for existing SC-SA segments (1Q21).
 - Expect acceptance of alternate compliance to abandon flowline/cover ends
 - Ensure alignment with other segments and permits to minimize reinstatement risks
- Develop project plan to cover procurement & offshore construction plan/options
 - Update project basis/execution plan
 - Test value cases with spend/delivery outcomes (timing flexibility)
 - Perform review of cost/schedule, review options for contract/funding model (considering up-front installation engineering and long leads vs. full scope/milestones)



Current AFEs and next proposals

AFE	Description	AFE Amt \$m	Actuals ITD \$m	VOWD ITD \$m thru Jan 7, 2021
NKO393343 <u>LSPS Co-Owners</u>	Expenditures encompassing bp's work as operator in support of the LSPS emergency response and diagnostic campaigns	4.2	4.3	4.3
NKO393390 <u>LSPS Co-Owners</u>	Expenditures encompassing bp's work as operator in support of the LSPS in-Situ Repair	0.8	0.0	0.7
NKO393392 <u>MC519 Partners</u>	Expenditures encompassing bp's work as operator in support of the LSPS Single Line Feasibility	0.5	0.0	0.2
NKO392392 <u>Supplemented Genovesa Partners</u>	Expenditures encompassing bp's work in support of the Genovesa Project , up to 1 st oil	5.2	4.1	4.6

- BP will circulate a draft letter agreement to address commitment to full remediation of the LSPS, and two AFEs for the Single Flowline operation(s)
 - Plan for follow-up co-owner call week of 18th January
- AFE proposals for long-term remediation of the loop expected later in 1Q21.